

38. (currently amended) The combination ~~A brace for distributing forces~~, according to claim 33, wherein said helix is constructed with a radius of curvature that increases from forward to rearward.

39. (currently amended) The combination ~~A brace for distributing forces~~, according to claim 33, wherein said brace is constructed with a substantially straight portion at its distal end to provide additional space for insertion of the arm into said conical space.

40. (currently amended) The combination ~~A brace for distributing forces~~, according to claim 33, wherein said brace is oriented within the device so that the wrist is free to flex to allow the hand to twist on said grip about said second axis.

41. (currently amended) The combination ~~A brace for distributing forces~~, according to claim 33, wherein said brace is oriented within the device so that the wrist is free to flex about a third axis displaced rearward of said pistol grip second axis and transverse thereto.

42-44. (Canceled)

REMARKS/ARGUMENTS

The foregoing amendments have been made in response to the official action of March 17, 2006. Independent claims 1, 18 and 33 have been amended. Claims 11, 15, 27 31, 32 and 42-44 have been cancelled.. The remaining dependent claims have been amended consistent with the amendments to independent claims 1, 18 and 33, as well as to clarify terminology consistent with the invention.

Reconsideration is requested of the requirement for submission of an amendment to clarify the disclosure in view of the foregoing amendments. Reference to "raised contour" has been deleted from claims 1 and 34. Claim 44, which had been objected to, has been cancelled.

Reconsideration is requested of the objection to the disclosure under 37 CFR §1.71. The objection appears to be based on a misunderstanding of the difference between the pitch of the helix and the radius of curvature of the helix. The application, on page 8, defines pitch of a helix correctly, that is, the pitch is "the distance between adjacent turns of the helix measured along

the line parallel to its axis. . .”. For example, a cone-shaped helical spring may have a constant pitch, while the radius varies from one end of the conical spring to the other. Indeed, a cylindrical coil spring having a constant radius can have varying distances between adjacent turns of the helix. Similarly, one could make a spring to have a varying pitch, as well as a varying radius along its length. Thus, it should be understood that the pitch of a helix and the radius of a helix are independent parameters and a variation in one does not require a variation in the other. A device may be designed, as is applicant’s brace, to have a varying pitch as well as a varying radius. The objection, based on an “incomprehensible” disclosure should be withdrawn.

Upon further consideration, however, it is believed that the characteristic of the brace in applicant’s device that is described as having a varying pitch may be better described as referring to a varying “helix angle”. A helix is defined as “the three-dimensional curve that lies on a cylinder or cone, so that its angle to a plane perpendicular to the axis is constant”. See <http://www.thefreedictionary.com/helix> (copy enclosed). That angle is the “helix angle”. Helix angle is defined as “the constant angle at which a helix cuts the elements of a cylinder or cone.” (See <http://www.thefreedictionary.com/helix+angle>) (copy enclosed). As can be seen from the illustration accompanying the helix angle definition, the pitch between turns is constant. However, if the pitch between adjacent turns was varied, that would require a change in the helix angle to conform to the change. When the pitch between adjacent turns is decreased (i.e., the distance between the adjacent turns is lessened) the helix angle necessarily increases. In applicant’s preferred embodiment, the brace includes one helical turn. Thus, where applicant’s invention need not, and preferably does not, employ a plurality of complete turns, it is more appropriate to refer to the changing characteristic of the single turn by referring to a changing helix angle, rather than a changing pitch. The written description, as well as claims 8 and 24, have been amended accordingly.

Claim Rejections – 35 USC §112

The foregoing amendments and explanatory discussion are believed to resolve the rejections under 35 USC §112. The phrase “raised contour” is no longer present in claims. The lack of relationship between the helical pitch and the radius of the helix, as well as their independence of each other, has been explained. Claims 12, 13, 14, 28, 29 and 30 have been amended to delete the phrase “within the device”.

Claim Rejections – 35 USC §102

Reconsideration is requested of the rejection of claims 1-3, 6-10, 12-15, 17-20, 23-26 and 28-30. As anticipated under 35 USC §102(b) by Stephens Patent 5,331,989. Anticipation under 35 USC §102 requires each and every limitation of the claim to be disclosed in a single prior art reference, either expressly or inherently. The anticipating reference must disclose the elements in the arrangement called for by the claim. *In re Bond* 15 USPQ 1566 (Fed. Cir. 1990); *Connell v. Sears Roebuck & Co.*, 220 USPQ 193 (Fed Cir. 1983). If any limitation of the claim is missing from the reference, there is no anticipation.

Stephens fails to disclose a number of limitations of claim 1, particularly as amended. Specifically, Stephens does not disclose:

- An ergonomic handle detachably connectable to a tool, or the like;
- An attachment post having a connector at its forward end to releasably attach a tool;
- A seat portion to underlie the bottom of the user's wrist without restraining side-to-side flexure of the wrist;
- A band-like elongate brace that (1) extends from a side of the seat portion, (2) extends rearwardly in a continuous helix that (3) wraps progressively to define, in cooperation with the seat portion, a substantially complete revolution about an open space to accommodate the user's lower arm.

The Stephens patent is the sole reference on which the claims have been rejected. Stephens relates to a walking aid, either a cane or a crutch, having a long shaft 11, that extends from the user's hand to the walking surface, with a specially configured foot member 30 permanently attached to the end of the shaft by a hard epoxy (7:6-12). It bears no relation to applicant's invention of a handle for one-handed, ergonomic manipulation of a tool. Two embodiments are described. The first embodiment, described at 3:46-4:48 in said to include the shaft 11 and a hand grip 17 having special contours that "...[allow] the thumb bones, which are the strongest bones in the hand, to support some of the weight of the body typically borne by the wrist and fingers." (3:66-4:2). The hand grip 17 is "...is contoured to support the inner surface of the hand of the user and to distribute the pressure on the base of the hand over the widest possible area." (4:22-25). This embodiment describes, essentially, a cane with a specially contoured handgrip. It is illustrated in FIGS 6 and 7.

The second Stephens embodiment, referred to as a “crutch,” has the shaft and handgrip of the first embodiment with an additional element, an elongated cuff 51 engageable with the lower arm. The cuff is described as having a “lower forearm support portion 53” and an “upper forearm portion 65”. The upper and lower forearm portions 65, 53 are joined by a connecting portion 63. The lower forearm support portion 53 has walls that define a channel that conforms to the forearm and wrist to provide a seat and guide that supports the forearm and wrist. (4:58-62, 5:48-52).

Claim 1 has been amended to define with further clarity that a connector is disposed at the forward end of the attachment post, the connector being constructed to releasably attach a tool, or the like, to the handle. Stephens plainly does not disclose this limitation of the claim. Indeed, the Stephens device is not reasonably considered as being anything other than what is plainly described as a configuration for a cane or a crutch. The action refers to no prior art to indicate that the cane or a crutch may be used as a handle, detachably connectable to a tool of any kind, much less to serve as a handle for single-handed ergonomic manipulation of a tool. To the extent the rejection is based on the notion that the foot member at the ground-engaging end of the crutch or cane is a “tool” or anything like a “tool”, it is not detachably connectable to the shaft of the cane or crutch. It is attached by epoxy. There is no connector by which a tool can be releasably attached to the shaft of the cane/crutch.

Claim 1 also has been amended as to the seat portion to define its characteristic of underlying the bottom of the user’s wrist when the grip is grasped without restraining side-to-side flexure of the wrist. Stephens discloses no such arrangement. Stephens’ lower forearm support portion 53 is said to have “. . . an outer wall 57, a rear wall 59 and an inner wall 55 which form a lower support channel . . .” (4:58-60). While the rear wall 59 may be said to underlie the bottom of the user’s wrist, the inner and outer walls 55, 57 form a channel that necessarily embraces the inside and outside of the wrist and necessarily will restrain side-to-side flexure of the wrist. Indeed, the purpose of the channel is said to “. . . [form] an alignment means for an arm when it is inserted into the opening.” (5:44-48). The Stephens device is said to be “. . . particularly contoured to conform to the forearm and wrist and to provide a seat and guide which supports the forearm and wrist in a desirable angle relative to the elongated shaft and the body of the user.” (5:48-52). In other words, the Stephens device serves to confine the

wrist and forearm in a predetermined orientation. With applicant's claimed invention, the wrist is provided the freedom of side-to-side flexure by which the user can control the relation of the device to the lower arm and wrist.

Claim 1 also has been amended to further define the brace. In particular, the claim now defines the brace as being band-like and elongated in shape, as well as being integral with and extending from one side of the seat portion. The brace is further defined as extending rearwardly and in a continuous helix that wraps progressively about the arm-receptive space to define a complete revolution. Stephens does not disclose any component that can reasonably be considered as being a continuous helical element. To the extent that the rejection relies on the notion that the upper forearm-engaging portion 65 of the cuff 51 in Stephens is "constructed substantially in the form of a helix" that plainly is incorrect. There is nothing helical about the shape of the upper forearm-engaging portion 65 of the "elongated cuff 51". The action appears to justify considering the brace 65 as being helical on the theory that the upper forearm-engaging portion 65 is shown as having a "... a top edge higher than a lower edge". That proposal is supplemented by a copy of Fig 4 of Stephens on which some additional lines have been sketched. It is understood from the action that those lines are intended to represent the claimed helical brace. Those lines, however, are merely drawn arbitrarily and have no meaningful relation to the actual Stephens device. Indeed, one could draw a line of any shape on the inner surface of the upper forearm-engaging portion 65. Certainly, there is nothing in Stephens to suggest any helical element at all, much less that as claimed. Indeed, by way of analogy, one could draw a helix on the inner or outer surface of a cylindrical tube. That would not make the tube a helical member.

Moreover, Stephens does not disclose any band-like, elongate member that is integral with and extends from one side of the seat portion. Stephens does not disclose such a brace that also extends rearwardly and in a continuous helix that wraps progressively and in cooperation with the seat portion, defines a substantially complete revolution about the arm-receptive space.

Each of claims 2, 3, 6-10, 12-14 and 17 depends directly or indirectly from claim 1 and is not anticipated by Stephens for the same reasons. These dependent claims include additional limitations also not disclosed by Stephens. **Claim 8** includes the limitation that the helix is constructed with a helix angle from a forward to a rearward direction. Where Stephens has no

helix, it cannot have the claimed helix angle. The same applies to **claim 9** which defines the helix as having a radius of curvature that increases from forward to rearward. **Claim 10** includes the limitation that the brace is constructed with a substantially straight portion at its distal end. Although the rejection states that the upper forearm engaging portion 65 “. . . has a substantially straight portion at its distal end” there is nothing to support that either in the written description of Stephens or in the drawings. If the rejection of claim 10 is maintained, applicant requests that the “substantially straight portion” at the distal end of the upper forearm-engaging portion 65 in Stephens be specifically identified and described. Each of **claims 12 to 14** include limitations to the construction of the brace and its orientation so that the wrist is free to flex to allow the hand to twist on the grip. The basis of the rejection appears to be if the device is used by a small person or a child, the wrist would be capable of being flexed. While applicant's invention is intended to be adaptable to a range of arm sizes, it is not intended to be used with all arm sizes. The rejection ignores the fact that the size of the device is approximated to the size of the individual using it. The action proposes an extreme, unrealistic, variation in size. One would expect that a child would be provided with small crutches and, if a child were provided with the crutch of Stephen in a size adapted to the child's size, it would function as the Stephens device in which a channel in the lower forearm support 53 would restrict side-to-side wrist flexure. See also Stephens recognition of this at 7:2-4.

Claim 16 includes the additional limitation that the seat is substantially flat from forward to rearward. The surface 27 is described by Stephens as being “. . . contoured in a somewhat concave shape to receive and seek the heel of the hand.” (4:31-34). That is not substantially flat, and certainly is not described in Stephens as being substantially flat. It is a contoured surface adapted to engage and support the heel of the hand. **Claim 17** is directed to the seat which underlies the wrist and is substantially flat. Stephens does not anticipate claim 17 for this additional reason.

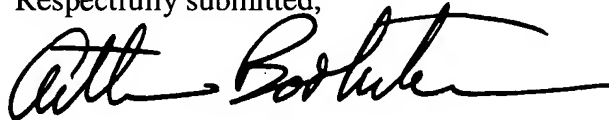
Independent claim 18 differs principally from claim 1 in that it omits the limitation of the seat portion. **Claim 18** is directed to the embodiment illustrated in Fig. 5A and 5B. The claim has been amended, as claim 1, to recite the nature of the device in the preamble and including the limitation of the connector at the forward end of the attachment post for releasable attachment of a tool, or the like, as well as the additional limitations relating to the structure and configuration

of the elongate, band-like brace. The claim differs from claim 1 in that the brace is integral with and extending transversely from one side of the grip. As discussed above in connection with claim 1, Stephens does not disclose the claimed brace. Moreover, to the extent that Stephens may be considered as having a grip, it does not have anything that extends transversely from one side of the grip, much less the claimed brace.

Each of claims 19, 20, 20-26, 28-30 depends directly or indirectly from claim 18, and is not anticipated by Stephens for the same reasons. Additionally, **claim 24** includes further limitations that are distinguishable over Stephens, namely, the feature of a helix angle that increases from forward to rearward. Where Stephens does not disclose a helical brace, it cannot disclose the claimed helix angle. The same reasoning applies to **claim 25** which includes the further limitation that the helix is constructed with a radius of curvature that increases from forward to rearward. **Claim 26** includes the additional limitation that the brace includes a substantially straight portion at its rearward end. **Claims 28-30** each include limitations directed to the configuration of the brace by which the wrist is free to flex to allow the hand to twist or flex about the grip (the second axis). As discussed above in connection with claims 12-14, Stephens does not disclose these features.

Independent **claim 33** and dependent **claims 34-41** have been amended to include limitations discussed above in connection with independent claims 1 and 18 and their respective independent claims. The comments and reasons for distinguishing over Stephens apply to claims 33-41 as well.

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